



ANFA 2014 CONFERENCE

PRESENTER ABSTRACTS
ACADEMY OF NEUROSCIENCE FOR ARCHITECTURE

On the Visual Experience of Meaning, Dwelling, and Place

KEVIN ROONEY, Ph.D

krooney@dimin.com, Overland Park, KS 66203

BOB CONDIA, AIA, ARCHITECT

condia@k-state.edu, Manhattan, KS 66506-2902

LESTER LOSCHKY, Ph.D., PSYCHOLOGY

loschky@k-state.edu, Manhattan, KS 66506-5302

1. ABSTRACT

It is well established that our vision breaks down into two separate pathways of central and peripheral processing (Leibowitz & Post, 1982; Mishkin, M., Ungerleider, L. G., & Macko, K. A., 1983; Livingstone, M. S., & Hubel, D. H., 1988; Norman, J., 2001). Each pathway responds to distinctly different types of information within the world around us; central vision is concerned with meaning, or what an object is, while peripheral vision is concerned with our dwelling or action, within a place or scene, in an environment (Goodale, M. A., & Milner, A. D., 1992; Larson, A. M., & Loschky, L. C., 2009; Leibowitz & Post, 1982). What is less known is how our visual experience of meaning, dwelling, and place is processed through these two pathways within the context of an emotional reaction to architecture (Heidegger, M., 1971; Norberg-Schulz, C., 1976).

In regards to emotions, neuroscientist Antonio Damasio describes two types of fundamental emotional reactions as primary and secondary emotions (2005). He defines primary emotions within the tone of action, while his definition of secondary emotions refers to the processing of semantic, or the meaning of, information present in the world. Given Damasio's definitions, there exists an overlap in the visual processing pathways and the two types of emotional reactions mentioned. Here, central vision processes "what" an object is in the context of our secondary emotions of meaning, like the objects painted in the caves of Cantabria, Spain, while our peripheral vision processes the primary emotional "actions" we perceive when dwelling in the scene of our environment, much like Monet's Impression, Sunrise.

As Louis Kahn's setting sun provides celestial meaning to the dwelling of place within the Salk Institute's plaza, our contribution for the presentation at ANFA is to illuminate a logical distinction between naturally dwelling within architecture through peripheral vision and examining the meaning of architecture through central vision. This is a distinction that divides the experience of place from the analysis of built form.



Figure 1. Altamira Bison, Cantabria, Spain by Ramessos

<http://commons.wikimedia.org/wiki/File:AltamiraBison.jpg>



Figure 2. Monet's Impression, Sunrise by Paris 16

http://commons.wikimedia.org/wiki/File:Monet_-_Impression,_Sunrise.jpg

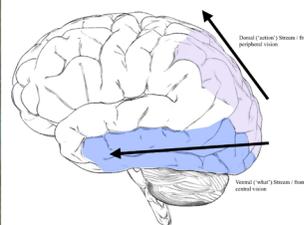


Figure 3. Dorsal versus Ventral Stream by Selket (modified by author)

http://commons.wikimedia.org/wiki/File:Lobes_of_the_brain_NL.svg



Figure 4. Salk Institute Sunset by Tom Shess (modified by author)

<http://www.webestates.biz/wp-content/uploads/2014/01/tom-shess-pillar-post-salk-institute-solstice-sandiego-34823.jpg>

2. REFERENCES

- Damasio, A. (2005). *Descartes' error: Emotion, reason, and the human brain* Penguin Books.
- Goodale, M. A. (1992). Separate visual pathways for perception and action. *Trends in Neurosciences*, 15(1), 20. doi: 10.1016/0166-2236(92)90344-8
- Heidegger, M. (1971). *Poetry, language, thought*. New York: Harper & Row.
- Larson, A. M., & Loschky, L. C. (2009). The contributions of central versus peripheral vision to scene gist recognition. *Journal of Vision*, 9(10), 6. doi:10.1167/9.10.6
- Livingstone, M., & Hubel, D. (1988). Segregation of form, color, movement, and depth: Anatomy, physiology, and perception.

- Leibowitz, H. W., & Post, R. B. (1982). The two modes of processing concept and some implications. In J. Bec (Ed.), *Organization and representation in perception* (pp. 343-363). Hillsdale, NJ: Lawrence Erlbaum.
- Mishkin, M., Ungerleider, L. G., & Macko, K. A. (1983). Object vision and spatial vision: Two cortical pathways. *Trends in Neurosciences*, 6, 414-417.
- Norberg-Schulz, C. (1976). The phenomenon of place. *The Urban Design Reader*, 125-137.
- Norman, J. (2001). Two visual systems and two theories of perception: An attempt to reconcile the constructivist and ecological approaches. *Behavioral and Brain Sciences*, 25(01), 73. doi:10.1017/S0140525X0200002X
- Sauchelli, A. (2012). The structure and content of architectural experience: Scruton on architecture as art. *Estetika: The Central European Journal of Aesthetics*, (01), 26.
- Scruton, R. (1979). *The aesthetics of architecture*. Princeton New Jersey: Princeton University Press.

3. AUTHOR BIOS

Kevin Rooney is the director of innovations at Dimensional Innovations and principal investigator for the Architectural Perceptions Lab at Kansas State. His work encompasses a diversity of scale and design disciplines, from engineering works like the facade for Cooper Union by Morphosis, the Taubman Museum of Art by Randall Stout, and 40 Bond by Herzog and de Meuron, to designing wearable technologies in response to the human experience of the internet-of-everything. He is currently a Ph.D. candidate studying neurocognitive design at the College of Architecture Planning and Design in conjunction with the department of Psychological Sciences and the department of Philosophy at Kansas State University with a professional degree in Architecture from the University of Arkansas. His work is focused on understanding how designed environments are cognitively processed through the visual perception stream and how those perceptions form our physiological responses into certain types of emotional experiences. He is the co-founder of the Architectural Perceptions Lab at Kansas State along with his Major Professor Bob Condia in the study of physiological responses to architecture. He also works closely with the Visual Cognition Lab run by committee member, Dr. Lester Loschky, to understand visual perception and attention as related to environmental conditions.

Bob Condia is an architect and design partner with Condia+Ornelas Architects, an award winning practice cited for intimately scaled and palpable experiences. A professor of architecture at Kansas State, he teaches architecture as an art form with due considerations to: beauty; coaching expertise; structural determination; the ancientworks of man; a building's terrestrial and celestial alignments; phenomenology of perception; poetics of space; and the perception of constructed space from neuroscience. He has been a design studio critic for 30 years in both architecture and interior design. In 2008, he received the Kansas State's Commerce Bank Distinguished Teaching Award. His publications range from monographs on progressive architects theoretical articles on the experience of space (focusing on Louis Kahn and Alvar Aalto); to a catalogue of his own surrealist illustrations; and discussions of creativity and expertise. Of particular interest to this abstract are his advanced seminars in perception that combines architectural theory, analytical philosophy and the neuroscience of aesthetic experience. Rare for an architect, he is certified in human subjects and won a university grant to equip a graduate lab with feedback gear, used in a study of emotional response to architectural imagery; "Architecture and Mood: physiological response to images of houses." Prof. Condia earned his Master in Architecture and Building Design at Columbia University 1983, and a Bachelor of Architecture at California Polytechnic State University, 1980.

Lester Loschky is an Associate Professor of Psychological Sciences at Kansas State University and heads the Visual Cognition Laboratory there. He does research and teaches primarily in the areas of Perception and Cognition, which intersect in the area of Visual Cognition. One of the major themes in his research over the last 20 years has been the perception of real-world scenes across the visual field, from central to peripheral vision. This research has generally focused on several key inter-related issues: the relationship between eye movements and attention, how peripheral vision guides attention, how perceptual quality varies from central vision to peripheral vision, and how much information from peripheral vision a viewer can process at any given moment in time during a single eye fixation. His work with Kevin Rooney and Bob Condia is at the confluence of several of the above issues with the experience of architectural environments.